ADHESIVE AND PERIPHERAL SYSTEMS AND METHODS FOR MEDICAL DEVICES

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application which is a divisional of U.S. patent application Ser. No. 15/864,539, filed on Jan. 8, 2018, now U.S. Publication No. US-2018-0126097-A1, issued May 10, 2018 and entitled "Adhesive and Peripheral Systems and Methods for Medical Devices" (Attorney Docket No. W45), is a continuation of U.S. patent application Ser. No. 15/350,733, filed on Nov. 14, 2016, now U.S. Pat. No. 9,861,769, issued Jan. 9, 2018 and entitled "Adhesive and Peripheral Systems and Methods for Medical Devices" (Attorney Docket No. U16), which is a continuation of U.S. patent application Ser. No. 13/942,051, filed on Jul. 15, 2016, now U.S. Pat. No. 9,492,613, issued Nov. 15, 2016 and entitled "Adhesive and Peripheral Systems and Methods for Medical Devices" (Attorney Docket No. K86), which is a continuation of U.S. patent application Ser. No. 12/626,166, filed on Nov. 25, 2009, now U.S. Pat. No. 8,486,018, issued Jul. 16, 2013 and entitled "Adhesive and Peripheral Systems and Methods for Medical Devices" (Attorney Docket No. H77), which is a continuation of U.S. patent application Ser. No. 11/704,897, filed on Feb. 9, 2007 now issued U.S. Pat. No. 8,113,244, issued Feb. 14, 2012 and entitled "Adhesive and Peripheral Systems and Methods for Medical Devices" (Attorney Docket Number 1062/E73), the entire disclosure of each of which is incorporated herein by reference in its entirety.

[0002] U.S. patent application Ser. No. 11/704,897 claims priority from the following U.S. Provisional Patent Applications:

[0003] Ser. No. 60/772,313 for "Portable Injection System" filed Feb. 9, 2006 (Attorney Docket No. 1062/E42), which is hereby incorporated herein by reference in its entirety;

[0004] Ser. No. 60/789,243 for "Method of Volume Measurement for Flow Control" filed Apr. 5, 2006 (Attorney Docket No. 1062/E53), which is hereby incorporated herein by reference in its entirety; and

[0005] Ser. No. 60/793,188 for "Portable Injection and Adhesive System" filed Apr. 19, 2006 (Attorney Docket No. 1062/E46), which is hereby incorporated herein by reference in its entirety.

[0006] U.S. patent application Ser. No. 11/704,897 may also be related to one or more of the following U.S. patent applications, all of which are hereby incorporated herein by reference in their entireties:

[0007] U.S. patent application Ser. No. 11/704,899, filed on Feb. 9, 2007 now U.S. Pat. No. 8,414,522, issued Apr. 9, 2013 and entitled "Fluid Delivery Systems and Methods" (Attorney Docket No. 1062/E70);

[0008] U.S. patent application Ser. No. 11/704,896, filed on Feb. 9, 2007 now U.S. Publication Number US 2007/0219496, published on Sep. 20, 2007 and entitled "Pumping Fluid Delivery Systems and Methods Using Force Application Assembly" (Attorney Docket No. 1062/E71);

[0009] U.S. patent application Ser. No. 11/704,886, filed on Feb. 9, 2007 now U.S. Pat. No. 8,439,875, issued May 14, 2013, and entitled "Patch-Sized Fluid Delivery Systems and Methods" (Attorney Docket No. 1062/E72); and

[0010] U.S. Provisional Patent Application No. 60/889,007, filed on Feb. 9, 2007 and entitled "Two-Stage Transcutaneous Inserter" (Attorney Docket No. 1062/E74).

FIELD OF THE INVENTION

[0011] This application relates generally to adhesive and peripheral systems and methods for medical devices.

BACKGROUND

[0012] Many potentially valuable medicines or compounds, including biologicals, are not orally active due to poor absorption, hepatic metabolism or other pharmacokinetic factors. Additionally, some therapeutic compounds, although they can be orally absorbed, are sometimes required to be administered so often it is difficult for a patient to maintain the desired schedule. In these cases, parenteral delivery is often employed or could be employed.

[0013] Effective parenteral routes of drug delivery, as well as other fluids and compounds, such as subcutaneous injection, intramuscular injection, and intravenous (IV) administration include puncture of the skin with a needle or stylet. Insulin is an example of a therapeutic fluid that is self-injected by millions of diabetic patients. Users of parenterally delivered drugs would benefit from a wearable device that would automatically deliver needed drugs/compounds over a period of time.

[0014] To this end, there have been efforts to design portable devices for the controlled release of therapeutics. Such devices are known to have a reservoir such as a cartridge, syringe, or bag, and to be electronically controlled. These devices suffer from a number of drawbacks including the malfunction rate. Reducing the size, weight and cost of these devices is also an ongoing challenge.

SUMMARY OF THE INVENTION

[0015] In one embodiment of the invention, a repeater system is provided for controlling a medical device. Such a system may include a repeater and a user interface. The repeater may include circuitry (i) for, over a given range, receiving signals from at least one wearable medical device, (ii) for, over the given range, transmitting signals to the wearable medical device, (iii) for, over a longer range exceeding the given range, transmitting the received signals to a user interface located remotely from the patient, and (iv) for, over the longer range, receiving signals from the user interface. The user interface may include circuitry (i) for receiving signals from the repeater, and (ii) for transmitting signals to the repeater. The medical devices may be wearable or implanted devices.

[0016] In some embodiments, the user interface's circuitry may also provide for the reception of signals directly from the wearable device and the transmission of signals directly to the wearable device. Also, the repeater's circuitry may be adapted to receive signals from multiple medical devices.

[0017] In some embodiments, the repeater may include one or more of the following: memory for logging received data, a processor for analyzing received data for the presence of a fault condition, and an alarm for notifying a user of the presence of a fault condition. The fault condition may include an occurrence of an event wherein the repeater is separated from the wearable medical device by more than the given range.